



**PATENT APPLICATION**

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In re the Application of

Albert DURANTON

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For: A PACKAGING DEVICE FOR A TREATMENT SUBSTANCE

**SUBMISSION OF TRANSLATION OF PROVISIONAL APPLICATION**

Director of the U.S. Patent and Trademark Office  
Washington, D.C. 20231

Sir:

In accordance with 37 CFR 1.78 (a)(5), attached is a translation of Provisional Application No. 60/438,773 filed on January 9, 2003. Upon information and belief, the translation is an accurate English translation of the provisional application as filed.

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## A PACKAGING DEVICE FOR A COSMETIC/CARE SUBSTANCE

The present invention provides a packaging device for a cosmetic/care substance.

Often, a bathroom is heated intensely only shortly before it is used, such that, when used, personal hygiene substances such as shampoos or shower gels are often at a temperature that is much lower than ambient temperature, and than the temperature of the bath or shower water, which can lead to an unpleasant cold sensation when they are applied.

This unpleasantness can cause a young child to refuse to be shampooed, or can make shampooing difficult, for example.

A need exists in particular to make it easier for a child to accept a personal hygiene substance such as a shampoo or a shower gel.

More generally, a need exists to make cosmetics more comfortable to use, in particular substances designed to be used in the bath or in the shower.

A need also exists for it to be possible for the activity of a substance to be reinforced rapidly, e.g. by enhancing the penetration of agents, or by accelerating its effects, in particular in the case of a self-tanning substance.

French patent application FR 2 376 401 discloses an appliance including heater resistors enabling shampoos to be heated to a temperature that is slightly higher than the temperature of the human body so as to make them more effective. That appliance presents a relatively complex structure and, furthermore, it is designed to be used in a hairdressing salon.

The invention seeks to satisfy all or some of the needs identified above.

In a first of its aspects amongst others, the invention provides a packaging device comprising:

- a receptacle containing a cosmetic/care substance, in particular a shampoo or a shower gel;
- an indicator that is capable of changing state as a function of temperature.

5 As a result of the change of state of the indicator, the user can be made aware that the substance contained in the receptacle is at the right temperature to be applied.

10 The indicator may be arranged so as to change state a first time when the temperature reaches a first value, and a second time when the temperature reaches a second value that is higher than the first. Thus, when the second value corresponds to a maximum temperature for applying the substance in comfortable or safe conditions, 15 the user can be warned that the substance is too hot to be applied.

20 The indicator may also be arranged so as to change state only when the temperature of the substance exceeds a predefined value, beyond which there exists a risk of scalding.

25 In an exemplary embodiment of the invention, the indicator changes in appearance, e.g. in color, with temperature. The indicator may change state when the temperature reaches a value lying in the range 30°C to 40°C, for example.

For an adult, the change in color may indicate that the substance is at the right temperature, for example.

30 For a child, seeing the indicator change color may be a kind of game, thereby making it easier for the child to accept that the time has come for shampooing, for example, which generally takes place after the bath, when the child wants to continue playing.

35 The receptacle may include a safety member arranged so as to prevent the substance from being expelled when said substance is too hot. Such a safety member comprises a shutter capable of changing shape with temperature, e.g. by expanding, so as to close a passage for the

substance above a certain temperature, or a bolt capable of changing shape and of preventing a dispenser member from being actuated. By way of example, the safety member may be arranged so as to prevent a pump equipping the receptacle from being actuated when the temperature is too high. When the receptacle includes a dispenser head capable of passing from a closed position to an open position by turning an element, the safety member may be arranged so as to prevent said element from turning when the temperature is too high.

The indicator may comprise a plurality of zones capable of changing color with temperature, the color-change thresholds being different depending on the zone. By way of example, this can enable the user to determine approximately the temperature of the receptacle while it is being heated, or to be warned when the substance is too hot or too cold to be applied.

The indicator may present an appearance which changes reversibly with temperature, i.e. the indicator can return to its initial appearance when the device returns to ambient temperature.

The indicator may be disposed in various ways on the device.

By way of example, the indicator may comprise at least one flexible medium fixed onto the receptacle, e.g. by adhesive. By way of example, the indicator may be presented in the form of an adhesive patch or label stuck onto the receptacle.

The indicator may also be made by printing onto the receptacle, e.g. with an ink including a thermochromic pigment.

The indicator may also be formed by incorporating a thermochromic pigment in the material of at least a portion of the receptacle.

The indicator may include any material that changes appearance with temperature and, for example, optionally encapsulated, cholesteric liquid crystals. Examples of

indicators that change color with temperature are described in European application EP 1 191 317 and US patent No. 5 789 578, in particular.

5 The change of state of the indicator may be detected other than visually.

By way of example, the indicator may be capable of releasing a volatile odorous substance when the temperature exceeds a certain threshold. For example, the odorous substance may be a perfume.

10 In an exemplary embodiment of the invention, the receptacle is arranged so as to contain a single dose of substance. This may prevent the user from applying too much substance which, in the case of a shampoo, can serve to prevent the substance possibly coming into contact  
15 with the eyes, and to reduce the amount of water required for rinsing.

In addition, the receptacle can then be smaller, thereby making it easier for a child to hold.

20 In exemplary embodiments, the receptacle may contain a quantity of substance that enables a plurality of doses to be dispensed.

25 The receptacle may include a storage space, and a dispenser member that is suitable for being put into communication with the storage space and for receiving a dose of substance.

The dispenser member may be connected to the remainder of the receptacle in optionally removable manner.

30 By way of example, the dispenser member may be connected to the remainder of the receptacle by means of a flexible tube.

The indicator that is capable of changing state with temperature may be fixed onto the dispenser member.

35 The dispenser member may optionally be arranged so as to be able to close the storage space in sealed manner.

The receptacle as a whole, or the dispenser member alone, may be arranged so as to enable relatively rapid heat exchanges with the outside, in particular by conduction, e.g. by using materials that are good conductors of heat, or by making the receptacle or the dispenser member with at least one wall that is relatively thin.

By way of example, the receptacle may comprise a pouch comprising two assembled-together sheets. By way of example, the sheets may present a multilayer structure with at least one metal layer, in particular made of aluminum.

Before being used, the substance may be heated in a variety of ways.

By way of example, the receptacle may include a fixing member enabling it to be fixed onto a radiator.

The receptacle may also be designed to be heated by being plunged into bath water or into a bain-marie.

The receptacle may thus advantageously include ballast enabling it to have substantially zero or negative buoyancy in water. Thus, when the receptacle is plunged into the water, its entire surface is in contact with the water, thereby encouraging heat exchange.

The receptacle may include at least one safety valve preventing excessive pressure building up inside the receptacle, e.g. as a result of the substance or the air contained therein expanding if the receptacle is heated by accident for too long to a temperature higher than 45°C, for example.

It is possible for the receptacle to be filled in part only, so that any expansion of the substance does not cause said receptacle to rupture.

In a variant, the receptacle may be made, at least in part, out of a resilient material or out of a porous material allowing air to pass but retaining the substance, or it may include a micro-orifice allowing air to pass but not the substance.

The receptacle may optionally include black walls so as to improve its absorption of infra-red rays.

Heating the substance can make washing more effective in the case of a personal hygiene substance, 5 and can reduce the dose used.

A receptacle of the invention which enables a substance to be heated rapidly to a given temperature can enable the formulation of the substance to be adapted to a predefined temperature of use, so as to obtain optimum 10 fluidity, effectiveness, and comfort, for example.

Heating the substance can make it possible, in particular in the case of a care substance, and in particular a cream, to improve penetration of an active agent into the skin or the scalp; to exert a warming and 15 a vascular effect in order to obtain a better color, for example; and/or to accelerate the dissolution of sebum or the diffusion of odors.

Heating the substance can also accelerate the effect of a substance, e.g. a self-tanning substance.

20 The substance may be liquid at ambient temperature, or, in a variant, may be solid at ambient temperature and become liquid after heating.

Instead of being heated, the substance may also be cooled in cold water or in a refrigerator in particular, 25 so as to impart a feeling of summer freshness, for example. In this case, the temperature indicator may be arranged so as to inform the user of the temperature of the substance, for example, so as to enable the user to use the substance when said substance is, for example, 30 not too cold, but is nevertheless cold enough. By way of example, the temperature indicator may change state, e.g. in appearance and/or it may solidify, below a given temperature, so as to inform the user that the substance is sufficiently cold. The indicator may also change 35 state a second time, e.g. in appearance, so as to inform the user that the substance is too cold to be used in conditions of good comfort. By way of example, the

temperature indicator may present, in a manner similar to that described above, a first colored zone for indicating that the substance is too cold, a second colored zone for indicating that the substance is too hot, and possibly a 5 third colored zone for indicating that the temperature of the substance corresponds to the expected temperature of use.

In another of its aspects, the invention also provides a method of applying a cosmetic/care substance, 10 the substance being contained in a packaging device as defined above, the method comprising the following steps:

• exposing the packaging device to a heat source, respectively cold, so as to raise, respectively to lower, the temperature of the substance at least until the 15 indicator changes state, or to a cold source so as to lower the temperature of the substance until the indicator changes state;

• applying the substance.

The heat source may be constituted by hot water, in 20 particular bath water or a bain-marie, by a heater appliance such as a radiator, or by solar radiation. The heat source may also result from an exothermic reaction resulting from reagents mixing, in a manner similar to certain food packagings. The cold source may be 25 constituted by cold water or by a refrigerator or a freezer, or may result from an endothermic reaction or from expanding a gas.

In another of its aspects, the invention also provides a method of applying a cosmetic/care substance, 30 the substance being contained in a device comprising a receptacle including a dispenser member as defined above, the method comprising the following steps:

• recharging the dispenser member with a dose of substance;

35 • exposing at least the dispenser member to a heat source, respectively cold, so as to enable the temperature of the substance contained in said dispenser

member to rise, respectively to lower at least until the indicator changes state;

· applying the substance contained in the dispenser member.

5 The invention will be better understood on reading the following detailed description of non-limiting embodiments thereof, and on examining the accompanying drawings, in which:

10 Figure 1 is a diagrammatic and fragmentary perspective view of a packaging device of the invention;

Figure 2 is a diagrammatic and fragmentary section view on II-II of a sheet used in manufacturing the pouch of Figure 1;

15 Figure 3 is a diagrammatic and fragmentary section view on III-III of the pouch of Figure 1 in the region in which the fixing element joins the pouch;

Figures 4 and 5 are diagrammatic and fragmentary section views of two examples of ballast;

20 Figure 6 is a diagrammatic and fragmentary view of a packaging pouch constituting another embodiment of the invention;

Figure 7 is a diagrammatic and fragmentary view of the pouch of Figure 1 immersed in hot water;

25 Figure 8 is a diagrammatic and fragmentary view of the pouch of Figure 1 fixed onto a radiator;

Figure 9 is a diagrammatic and fragmentary view of a receptacle constituting another embodiment of the invention;

30 Figures 10 and 11 show, in diagrammatic and fragmentary manner, another embodiment of a receptacle of the invention, seen from the front and the side respectively;

Figure 12 is a diagram showing the device of Figures 10 and 11 partially immersed in hot water;

35 Figure 13 is a diagrammatic elevation view of a device constituting another embodiment of the invention;

Figure 14 is a diagrammatic and fragmentary axial section view of the device of Figure 13;

Figure 15 is a diagrammatic and perspective view of a variant embodiment;

5       Figure 16 shows the device of Figure 15 partially immersed in hot water; and

Figure 17 is a diagrammatic and fragmentary view of a variant embodiment of the measuring-out member of Figure 14.

10      Figure 1 shows a packaging device 1 comprising a pouch formed, in the embodiment described, by assembling together two flexible sheets 2 and 3. As shown in Figure 2, each of said sheets is constituted by a laminate comprising a layer 4 made of metal, e.g. made of aluminum, covered on the inside by a layer 5 made of thermoplastic material enabling the two sheets 2 and 3 to be heat-sealed together, and covered on the outside by a film 6 made of thermoplastic material enabling decoration to be printed thereon.

20      In a variant, the sheets 2 and 3 can be made of plastics material only or can be made of other materials, e.g. woven or non-woven materials.

25      As shown in Figure 1, the pouch 1 can include a notch 8 enabling the user to open said pouch by tearing its edge in conventional manner.

In a variant not shown, the pouch 1 can include a reusable closure element enabling the user, after having emptied the pouch, to refill it and reclose it with a view to using it again.

30      By way of example, such a closure element can comprise two connection strips each secured to one of the sheets and capable of being assembled together by having matching shapes.

35      In another variant, the pouch 1 includes an opening and the sheets 2 and 3 are capable of being rolled up and held in this state so as to close the opening.

In the embodiment under consideration, the pouch 1 contains one dose of a cosmetic substance P, e.g. a shampoo or a shower gel.

The dose corresponds to a volume lying in the range 5 milliliters (ml) to 25 ml, for example.

On the sheet 2, the pouch 1 includes a temperature indicator constituted by a patch 10, for example, stuck on its outside face and including a thermochromic pigment presenting a change in color when its temperature exceeds 10 a certain threshold, lying in the range 30°C to 40°C for example.

In the variant shown in Figure 6, instead of the patch 10, the packaging pouch 1 includes a strip 11 comprising a plurality of zones that change in color for 15 respective increasing thresholds.

By way of example, the strip 11 can comprise a blue zone 11a, a green zone 11b, and a red zone 11c. At ambient temperature, only the blue zone 11a appears, the others being black. When the receptacle is heated, the 20 blue disappears, then the green zone 11b appears, indicating that the temperature of the substance is the desired temperature. If the temperature is too high, the red zone 11c appears.

The strip 11 thus makes it possible to follow 25 temperature variation as the substance P is heated, and the user can also be warned when the substance P is too hot to be dispensed in good conditions.

The pouch 1 can be heated by being immersed in hot water which fills a bath or a washbasin, for example, in 30 which case the pouch 1 advantageously includes ballast preventing it from remaining on the surface, and enabling it to float in mid water, for example, as shown in Figure 7.

By way of example, the ballast can be constituted by 35 a mass of a material that is denser than water, e.g. sand, housed in a cavity formed by folding the sheets 2

and 3, as shown in Figure 4, or formed between the inside facing faces of the sheets 2 and 3, for example.

5 The pouch 1 can also be heated by being put into contact with, or in the vicinity of, a hot surface, e.g. by being fastened to a radiator 30, as can be seen in Figure 8.

To this end, and as shown in Figure 1, the pouch 1 can include a hook 9 enabling it to be suspended from the radiator 30 between bars 31.

10 The hook 9 can be replaced by any other appropriate fixing member that enables the pouch 1 to be fixed onto, or in the vicinity of, a heater surface.

15 For example, it is possible to provide the pouch 1 with a cord enabling it to be suspended from the radiator.

In a variant, it is possible to provide a fastening zone of the VELCRO® type on the pouch 1, said fastening zone being capable of co-operating with a complementary fastening member secured to the radiator.

20 It is also possible to provide the pouch 1 with a magnet, enabling said pouch to be fixed onto the radiator.

25 In order to hold the pouch 1 in a substantially flat configuration in which the thickness of the substance is kept as small as possible, the pouch 1 can include, along at least one of its edges, a rigid rod preventing said pouch from folding. Such a rod can be sandwiched between the sheets 2 and 3, for example.

Figure 9 shows a packaging device 15 comprising a 30 pot 17 closed in sealed manner by a lid 16 stuck on top, which lid includes a tab 18 enabling the user to remove said lid for use.

The pot 17 contains one dose of shampoo or of shower gel, for example.

35 A strip 11 can be fixed onto the pot 17 so as to indicate temperature.

In the embodiments described above, the packaging device contains one dose of substance for a single application.

5 In a variant, the receptacle can be arranged to contain a quantity of substance that enables a plurality of doses to be delivered.

10 Figure 10 shows an embodiment of a packaging device 20 comprising a bottle 25 which can have deformable walls, said bottle being provided with a neck 26 closed by a conventional cap 27 having a pivoting lid.

The bottle 25 is arranged to contain between 50 ml to 500 ml of substance, for example.

15 In the vicinity of its bottom, the bottle 25 includes an orifice 21 communicating with a tube 22 secured to the bottle 25, said tube 22 being able to serve as a measuring-out and dispenser member.

20 The tube 22 includes a preferred deformation zone 23 in the vicinity of the opening 21, said preferred deformation zone being constituted by a bellows-shaped segment, for example.

25 The tube 22 can be held against the wall 28 by fastening means fixed on the wall 28, such as a pair of resilient tabs 29, for example. In a variant, the fastening means include a portion in relief integrally molded with the bottle, for example.

By way of example, the length of the tube 22 corresponds substantially to the length of the bottle 25.

30 The tube 22 is closed at its top end by a removable stopper 35 and includes a temperature-sensitive indicator 10.

The tube 22 can be made of transparent material and can include graduations 39 that make it possible to evaluate the quantity of substance contain therein.

35 In order to use the device 20, the user fills the tube 22 with substance by pressing, if necessary, on the walls of the bottle 25.

Then, after moving the tube 22 away from the wall 28 of the bottle, the user immerses said tube in a bath of hot water, for example, as shown in Figure 12, so as to enable the dose of substance contained in the tube 22 to 5 be heated.

By observing the color of the indicator 10, the user can know if the substance contained in the tube 22 is hot enough.

In order to dispense the substance, the user removes 10 the stopper 35 and possibly presses the wall of the tube 22 or the wall of the bottle 25.

A particular advantage of the embodiment in Figure 12 is to reduce the length of time required to bring the substance to the desired temperature.

15 If necessary, the device includes a plurality of tubes disposed side by side, for example. The tube 22 can also be replaced by a dispenser member having some other shape.

Figure 13 shows a packaging device 50 constituting 20 another embodiment of the invention.

The device 50 comprises a bottle 51 which can have deformable walls, for example.

The bottle 51 includes a neck 52 onto which there is fixed a dispenser member 53 which, in the embodiment 25 under consideration, also serves as a stopper. The dispenser member 53 includes a threaded skirt 54 which enables it to be fixed onto the neck 52 of the bottle 51, and a sealing lip 57 capable of bearing in sealed manner on the neck 52.

30 A temperature-sensitive indicator 10 is fixed onto the dispenser member 53.

With reference to Figure 14, it can be seen that the dispenser member 53 includes an inside space 70 which can communicate with the inside of the bottle 51 via an 35 opening 55 opening out inside the threaded skirt 54, the opening 55 being closed at rest by a valve 56 which is made of elastomer in the embodiment under consideration.

In the embodiment described, the dispenser member 53 presents a substantially spherical shape, and includes, at its top end, a dispenser nozzle 58 capable of being closed by a cap 59.

5 In order to dispense the substance, the user presses on the wall of the bottle 51, for example, so as to expel the substance contained in said bottle towards the dispenser member 53, the valve 56 opening under the pressure of the substance. The cap 59 might need to be loosened so as to enable air to escape during filling.

10 The user then removes the dispenser member 53 from the bottle 51 and places the dispenser member 53 in the bath, for example, so that its contents are heated. Once the indicator 10 has changed color, the user removes the cap 59 so as to be able to dispense the dose of substance contained in the inside space 70.

15 In the embodiment described above, the dispenser member 53 is removed from the bottle 51 when the substance is dispensed.

20 In the variant shown in Figure 15, a dispenser member 53' is permanently connected to the bottle 51 by means of a flexible tube 60.

A dose of substance contained in the dispenser member 53 can be heated by immersing the dispenser member 25 53 in hot water, as shown in Figure 16, the bottle 51 being able to float on the surface, if necessary.

Naturally, the invention is not limited to the embodiments described above.

30 The device can be exposed to the rays of the sun in order to be heated.

The device can also include a safety member arranged so as to prevent the substance being expelled when said substance is too hot.

35 By way of example, Figure 17 is a diagrammatic and fragmentary view of a variant embodiment of the dispenser member 53 in which the dispenser nozzle 58 is fitted on the inside with a shutter 80 made, for example, out of a

material that expands beyond a certain temperature, e.g. 40°C, so that the substance can be expelled only when its temperature is lower than 40°C, for example.

Throughout the description, including in the claims,  
5 the term "comprising a" should be understood as being synonymous with "comprising at least one", unless specified to the contrary.

## CLAIMS

1. A device comprising:
  - a receptacle (1; 17; 22, 25; 51, 53; 51, 53') containing a cosmetic/care substance (P), in particular a shampoo or a shower gel;
  - an indicator (10; 11) configured to change state as a function of temperature.
- 10 2. A device according to the preceding claim, wherein the indicator (10; 11) is configured to change state a first time when the temperature reaches a first value, and a second time when the temperature reaches a second value that is higher than the first.
- 15 3. A device according to the two previous claims, wherein the indicator (10; 11) has an appearance which changes with temperature.
- 20 4. A device according to the preceding claim, wherein the indicator (10; 11) changes color with temperature.
- 25 5. A device according to the two preceding claims, wherein the indicator has an appearance which changes reversibly with temperature.
6. A device according to any one of claims 3 to 5, wherein the indicator (10; 11) comprises a thermochromic pigment.
- 30 7. A device according to claims 1 and 2, wherein the indicator (10; 11) is configured to release a volatile odorous substance when the temperature exceeds a certain threshold.
- 35 8. A device according to any one of the preceding claims, wherein the indicator (10; 11) comprises at least one

flexible support fixed onto the receptacle, in particular by sticking.

9. A device according to any one of the preceding claims,  
5 wherein the receptacle (1; 17) is configured so as to contain a single dose of substance.

10. A device according to the preceding claim, wherein the receptacle comprises a pouch (1).

10 11. A device according to any one of claims 1 to 8, wherein the receptacle contains a quantity of substance that enables a plurality of doses to be dispensed.

15 12. A device according to the preceding claim, wherein the receptacle includes a storage space (25; 51).

13. A device according to the preceding claim, wherein  
20 the receptacle includes a dispenser member (22; 53; 53') that is suitable for being put into communication with the storage space (25; 51) and for receiving a dose of substance.

25 14. A device according to the preceding claim, wherein the dispenser member (53) is connected to a remainder of the receptacle in removable manner.

30 15. A device according to claim 14, wherein the dispenser member (53) is configured so as to allow closure of the storage space in sealed manner.

16. A device according to claim 13, wherein the dispenser member (22; 53') is connected to a remainder of the receptacle in non-removable manner.

17. A device according to claim 16, wherein the dispenser member (53') is connected to a remainder of the receptacle via a flexible tube (60).
- 5 18. A device according to any one of the preceding claims, wherein the indicator (10; 11) changes state when the temperature reaches a threshold lying in the range 30°C to 40°C.
- 10 19. A device according to any one of the preceding claims, wherein the receptacle comprises a fixing member (9) allowing the receptacle to be fixed onto a radiator.
- 15 20. A device according to any one of the preceding claims, wherein the receptacle (1) comprises ballast allowing the receptacle to have zero or negative buoyancy in water.
- 20 21. A device according to any one of the preceding claims, wherein the substance is a self-tanning substance.
- 25 22. A method of applying a cosmetic/care substance contained in a packaging device as defined in any one of the preceding claims, said method comprising the following steps:
- exposing the packaging device to a heat source, respectively cold, so as to raise, respectively to lower, the temperature of the substance (P) at least until the indicator (10; 11) changes state,
  - applying the substance.
- 30 23. A method according to the preceding claim, wherein the heat source comprises at least one of hot water, a hot surface such as a radiator.

24. A method of applying a cosmetic/care substance contained in a device comprising a storage space and a dispenser member as defined in any one of claims 13 to 17, said method comprising the following steps:

- 5       · recharging the dispenser member with a dose of substance;
- 10      · exposing at least the dispenser member to a heat source, respectively cold, so as enable the temperature of the substance contained in said dispenser member to rise, respectively to lower, at least until the temperature indicator changes state,
- 10      · applying the substance contained in the dispenser member.

## A B S T R A C T

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"A packaging device for a cosmetic/care substance"

10 The present invention relates to a packaging device comprising:

- a receptacle (1) containing a cosmetic/care substance, in particular a shampoo or a shower gel;
- an indicator (11) configured to change state as a function of temperature.

15

Figure: 6